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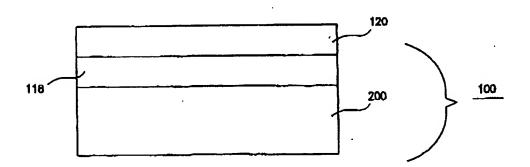
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(54) Title: BISMUTH THIN FILM STRUCTURE AND METHOD OF CONSTRUCTION



(57) Abstract

The invention is directed to the use of electrochemical deposition to fabricate thin films of a material (e.g., blamuth) exhibiting a superior magnetoresistive effect. The process in accordance with a preferred embodiment produces a thin film of bismuth with reduced polycrystallinization and allows for the production of single crystalline thin films. Pabrication of a bismuth thin film in accordance with a preferred embodiment of the invention includes deposition of a bismuth layer (120) onto a substrate (200) with a metallic underlayer (118) using electrochemical deposition under relatively constant current density. Preferably, the resulting product is subsequently exposed to an unnealing stage for the formation of single crystal bismuth thin film. The inclusion of these two stages in the process produces a thin film exhibiting superior MR with a simple field dependence in the process suitable for a variety of field sensing applications.